Attorney Docket # 5083-47PUS Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
Stefan HÖLLER et al.
Serial No.: 10/520,472
Filed: April 7, 2005
For: Fuel Cell Stack Comprising a Counterflowing Cooling System and a Plurality of Coolant-Collecting Ducts Located Parallel to the Axis of the Stack

Examiner: Suitte, Bryant P.
Group Art: 4191

Commissioner for Patents
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

SIR:

This is a Request for a Panel Review of Issues on Appeal. A Notice of Appeal is filed concurrently herewith in response to the final Office Action issued September 1, 2009. No amendments are being filed with this Request.

Arguments supporting the Request for Review begin on page 2.

ARGUMENTS

Claims 12-29 and 32-35 are pending in this application. Independent claim 12 is finally rejected under 35 U.S.C. § 102(b) as anticipated by Vitale (US 6,066,408).

Independent claim 12 recites "each of the fuel cells defining a plurality of substantially parallel channels", "each of said channels extending transversely to the stack axis and having two open ends on different sides of said fuel cell", and "wherein a direction of flow of one of said channels is opposite to a direction of flow of an adjacent one of said channels in said each of said fuel cells." Accordingly, the claimed plurality of channels must meet each of the following requirements:

- the channels must be parallel;

- each of the plural channels must have two open ends of different sides of the fuel cell; and

- the direction of flow in adjacent ones of the plural channels must be opposite.

The Examiner's rejection of claim 12 refers to cooler-humidifier plate 202 of Vitale as having a plurality of channels (see lines 5-6 from bottom of page 2 of the Office Action). There is a clear deficiency in the rejection of claim 12 because none of Vitale's humidification flow channel 218 (see Figs. 2B and 3), coolant flow channels 206, 206' (see Fig. 6), and the manifolds through the cooler-humidifier plate 202 (see Fig. 2C) can be considered to disclose the above limitations of independent claim 12.

When rejecting independent claim 12, the Office Action fails to identify specific elements of Vitale that teach the claimed plurality of "channels" or the claimed "open ends" of each of the channels. Instead, the Office Action generally refers to the cooler-humidifier plate 202 and Figs. 2A, 2B, 2C, 3, and 6 of Vitale for their alleged teachings of the above recited claim features (see page 2 of Office Action).

Vitale teaches a single humidification flow channel 218 on one side of the cooler-humidifier plate 202 (Fig. 3) and coolant flow channels 206, 206' on the other side of the cooler-humidifier plate 202 (Fig. 6). More specifically, Fig. 3 of Vitale shows the humidifier face of the cooler-humidifier plate 202, on which only one humidification flow channel 218 is provided (see, also, Fig. 2B, col. 5, ll. 32-33, and col. 7, ll. 52-53 of Vitale). Indeed, Vitale explicitly states that "humidification flow channel 218 consists of a single flow channel" (see col. 7, ll. 52-53). Accordingly, the humidification flow channel 218 alone cannot be considered as the "plurality of channels" recited in independent claim 12. Therefore, Fig. 3 of Vitale does not teach "each of the fuel cells defining a plurality of substantially parallel channels."

Applicant's also note that the humidification flow channel 218 is not parallel to the coolant flow channels 206, 206'. Thus, the humidification flow channel 218 can not be considered to be one of a plurality of parallel channels with the coolant flow channels 206, 206'.

Fig. 6 of Vitale shows that the coolant flow channels 206, 206' each have a serpentine configuration with a common coolant water inlet 606 and respective outlets 614, 616. However, the open ends of each coolant flow channel 206, 206' (e.g., coolant water inlet and outlet 606, 614 of coolant flow channels 206 and inlet and outlet 606, 616 of coolant flow channel 206') are arranged on the same side of the cooler-humidifier plate 202 (e.g., the top side of the cooler-humidifier plate 202 in Fig. 6). Therefore, Fig. 6 of Vitale does not teach "each of said channels extending transversely to the stack axis and having two open ends on different sides of said fuel cell," as is asserted in the Office Action.

Accordingly, the coolant flow channels 206, 206' fail to disclose, teach or suggest "each of the fuel cells defining a plurality of substantially parallel channels", "each of said channels extending transversely to the stack axis and having two open ends on different sides of said fuel

cell", and "wherein a direction of flow of one of said channels is opposite to a direction of flow of an adjacent one of said channels in said each of said fuel cells."

Moreover, the Office Action refers to column 7, lines 8-20 of Vitale for its alleged teachings of two open ends formed on two different sides of the fuel cell (see last line of page 2 of the Office Action). The Examiner's cited portions of Vitale describe various manifolds 232, 236, 240, 244, 248, 252, 256, 260, 264, 268, and 272. Among the various manifolds of Vitale, only coolant water inlet and outlet manifolds 264, 268, 272 are in fluid communication with the coolant flow channels 206, 206'. These manifolds 264, 268, 272 of Vitale are arranged on the same side of the fuel cell assembly. Therefore, the Examiner's cited portions of Vitale doe not support the conclusion in the Office Action that Vitale teaches "each of said channels ... having two open ends on different sides of said fuel cell," as recited in independent claim 12.

Moreover, each of these manifolds extends in the direction of the stack axis of the stack assembly as shown in Figs. 2A and 2B. Accordingly, the manifolds themselves can not be considered to be the claimed channels because the manifolds do not extend transversely to the stack axis.

In view of all the above, none of Vitale's humidification flow channel 218 (see Figs. 2B and 3), coolant flow channels 206, 206' (see Fig. 6), and manifolds (see Fig. 2C) can be considered to teach or suggest "each of the fuel cells defining a plurality of substantially parallel channels", "each of said channels extending transversely to the stack axis and having two open ends on different sides of said fuel cell", and "wherein a direction of flow of one of said channels is opposite to a direction of flow of an adjacent one of said channels in said each of said fuel cells," as recited in independent claim 12.

Withdrawal of the claim rejection of independent claim 12 is therefore respectfully requested.

Claims 13-29 and 31-36 depend, directly or indirectly, from allowable independent claim 12 and are therefore allowable therewith.

In addition, dependent claims 13-29 and 31-35 include features, which serve to even more clearly distinguish the claimed invention over the applied prior art. For example, claim 34 recites that "said channels are rectilinear between said two open ends," while Vitale's flow channels 206, 206' have a serpentine shape. Claim 35 requires "at least three channels" to thereby further distinguishing Vitale's teaching of two flow channels 206, 206'.

In conclusion, independent claim 12 and the dependent claims 13-29 and 31-36 each patentably distinguish over the Vitale, with or without additional references. Withdrawal of all the claim rejections are therefore in order. Applicants respectfully submit that the subject application is in condition for allowance, and such action is respectfully requested.

Respectfully submitted,
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Dated: December 1, 2009